ABSTRACT

Title: Sport performance structure analysis of men's disciplines K1 1000 and 500 meters in flatwater sprint canoeing.

Objectives: The aim of this research is to determine relationships between general condition factors of sport performance and the top level of sport performance in individual mens' disciplines at 1000 and 500 meters in flatwater sprint canoeing.

Methods: To determine statistical dependance between sport performance at individual disciplines of 1000 or 500 meters and choosen factors of sport performance, the correlation research was used. As a variable-dependent values, the final results of sport performance at 1000 and 500 meters were used. As a variable-independent values, the final results of testing parameters were used. To determine the statistical dependance methods of Pearson's and Spearman's correlation coefficients were used.

Principal component analysis and factor analysis are a multivariate statistical methods which are used to reduce entered data – entry of variable values in a way of expressing the included infomation by a smaller amount of variable values which are being grouped into components.

Method of artificial neural network as a method of artificial inteligence was used to determine most important predictors of sport performance structure. This method provides information about the distribution and the importance of all individual parameters inside the sport performance structure.

To determine similarity of involved probands, the hierarchical clustering method was used. Based on the level of similarity between parameters, the hierarchical tree called dendrogram was created.

Results: As explained by the correlation analysis results, the level of sport performance at 1000 and 500 meters distance is significantly defined by the level of middle – duration of specific endurance and by the cardiorespiratory system´s development level.

Parameters explaining the level of aerobic and anaerobic capacity were defined as the most important predictors of sport performance at 1000 and 500 meters distances.

Keywords: artificial neural network, component, factor, flatwater sprint canoeing, parameter, sport performance, statistical dependance